

# Total Quality Management: The Socio-Demographic and Operational-Financial Determinants for Users' Perception of the Services Quality

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**Abstract**—The aim of this paper is to know the socio-demographic and operational-financial determinants of the services quality perceived by users of the national health services. Through the use of an inquiry conducted by the Ministry of Health, comprehending 16.936 interviews in 2006, we intend to find out if there is any characteristic that determines the 2006 inquiry results. With the revision of the literature we also want to know if the operational-financial results have implications in hospitals users' perception on the quality of the received services. In order to achieve our main goals we will make use of the regression analysis to find out the possible dimensions that determine those results.

**Keywords**—Management by Results, Quality Approach, Tableau de Bord, Total Quality Management, Services quality.

## I. INTRODUCTION

THE Total Quality Management (TQM) and the Management by Results (MbR) were two models adopted by the public sector in order to face the demand for public organizational change. That demand originated, among others, in the public services' users. These stakeholders wanted public organizations to change in order to have available services with more quality and less expensive for them, as taxpayers. The Portuguese Government decided thus to introduce two models in the national administrative reform – which we will now present.

## II. THE QUALITY APPROACH IN THE PUBLIC SECTOR REFORM

The quality model was originally introduced and developed in the private sector and holds as basic principles the users' satisfaction and the promotion of organizational efficiency, in order to increase profits [3]. This model was developed due to services' saturation and goods supplied by the markets and obliged organizations to satisfy customers as a prime objective, in order to gain competitive advantage [9] – the only way to survive. After 1980, the quality approach was largely used in the private sector through the use of TQM. Although there is no universally accepted concept [17], in this paper we assume TQM as a continual improvement in process and the outcomes of the organizational activity [18].

Besides private firms, the quality approach and the TQM model were introduced in the British Public Sector in 1991 through the *Citizen's Charter Initiative* [4]–[21]–[24]. The

main principles to apply this model were to promote a closer relation between citizens and the administration through the public services users' satisfaction as well as to promote organizational efficiency [23]. After the United Kingdom (UK), other countries employed this model, for example: France, Belgium, United States, Italy, Portugal and Finland [20]. These countries had the intention of raising the public administration performance, developing the complaint mechanisms in order to make the organizations more responsible and being aware of users' expectations and needs [16].

With the introduction of this model in the Public Sector, users become the main interested parts in the ways public services were delivered [7]. Consumers also become the definers of the produced goods and services delivered by a public organisation [7] – which focuses the *meso* level identified by [19].

The user as the definer of quality plays a central role in the quality concept. Although the discussion of this concept is still happening [8], in this paper we assume quality as the knowledge of customers' needs and their satisfaction [10], and not the (exclusive) presence of a single property [19]. Even though the quality concept is still being debated, in these terms it can be explored in many different ways, especially because people with different socio-demographic characteristics perceived quality in a different way [19]. Due to this statement we have the following work hypothesis:

*Hypothesis 1: Socio-demographic conditions determine the evaluation of the perceived quality services.*

To sum up, we can say that the TQM was developed in the private sector and was introduced in the public sector in the 90's decade. Central to the use of this model was the relation between citizens and public administration, especially when public services users become the definers of the services quality. Besides the quality of services, the use of this model intended to promote organizational efficiency [1]. In what is related to the promotion of the organizational efficiency, Governments made use of the MbR and especially of the *Tableau de Bord* (TdB) model – as we shall see.

## III. THE MANAGEMENT BY RESULTS IN THE PUBLIC SECTOR: THE USE OF THE *TABLEAU DE BORD*

As a management tool, TQM believes that the organizational processes must continually be improved [15] in

order to increase organizational performance [3]–[5]–[6]–[13]–[17]–[19]. The enlargement of organizational performance was also supported by the introduction of managerial tools, such as MbR.

The MbR was one of the tools that Governments made use of in order to define and measure the public organizational performance. Its use in the Public Sector originated in the North of Europe, especially in the Scandinavian countries in the 80's [25]. As a tool, MbR main purposes are to define the organizational objectives and to execute the immediate action in any factor that can slow the productivity down [10]. These main purposes were influenced by the model proposed by TdB.

TdB began in France more than 50 years ago [11]. This tool was developed by engineers with the purpose of better understanding the cause-effects relations in what is related to the organizational production level [11]–[14]. TdB can benefit the organization in several ways, especially contributing to the establishment of the management agenda and at the same time focusing the essential managerial factors [11].

Due to this fact, and although nothing is said by the authors, we can assume that the organizational performance has an impact in the evaluation made by users regarding the quality of services. The assumption is that, if MbR and TdB increase the organizational performance, the users' satisfaction is also likely to increase. Due to this assumption we have the following work hypothesis:

*Hypothesis 2: the financial and operational results determine users' perceived evaluation of the services quality.*

Independently of the answer to this question, the MbR, the TdB technique and the TQM have been used in the Portuguese Public Administration reform.

#### IV. THE PORTUGUESE HEALTH SECTOR

In what concerns the Portuguese Public Sector, we witnessed the beginning of the reform the moment the country entered the European Union in 1986 [2]. The intentions of this reform were to control inflation and to reduce the public debt and the external deficit [2]. Until the 90's, the Government made use of the privatisation mechanism and apart from that there were no significant internal changes in the ways public services were being delivered. After 1990, Portugal faced the influences of the public administration reforms that were crossing others countries and that became known as the New Public Management (NPM) [12].

In the comparison to the widely applied managerial model in other countries, some practical restrictions had to be evaluated in the national case.

In the first place, all stakeholders were convinced that an improvement in the services quality and in organizational efficiency was a priority. However, and to allow for those changes, a strong economical capacity was essential – something that public organisations did not have, especially after the global economic crises that began in the early 90's.

Due to this restriction, Governments allowed the entrance of private capital into the public sphere – especially in hospitals, which are part of health services. The reform in this sector was a priority, because it was the one that needed, and

still needs, more financial support. Apart from the concession contracts signed with some private organizations, the Government decided to privatise 31 public hospitals – in a first stage these 31 hospitals were totally public. Besides the financial-economical aspects, it is the health services sector, including hospitals, that most concerns citizens [22].

By the Ministry Resolution No. 15/2003, public hospitals privatization intended to: satisfy customers with a quality service and in an adequate timeframe; promote efficiency gains; introduce private managerial rules in health services – the only capable of raising efficiency; separate provider and producer and keep the tendency towards a general, universal and free health service.

In order to accomplish the Ministry resolution, it decided to launch the *ComuniCare* project, which among others included the *Project for hospitals users' satisfaction measurement* – in other words, it was the introduction of TQM in the hospitals owned by the Government. Apart from the quality approach, the Government decided to adopt the TdB principles in order to raise efficiency.

Taking in consideration the introduction of the Quality Approach, through the use of TQM model, and MbR, through the TdB model, and in order to check our hypotheses, we will discuss the results that are provided by the Health Ministry.

#### V. METHODOLOGY

With the aim of knowing the socio-demographic and operational-financial determinants of the users' perception on the quality of national health services, and resulting from the literature review, two hypotheses arise.

Considering our first hypothesis, we made use of the regression analysis with a constant and the Linear Regression through the Origin or without a constant, as predicted in the *Statistical Package for the Social Sciences – 15<sup>th</sup> version*. To test our hypothesis, the dependent variable was the Satisfaction Total Index that resulted from an inquiry conducted by the Ministry of Health [26]. The inquiry was made by telephone (in a total of 16.936 interviews, 6.161 were made to users that had been in an internment basis; 6.099 to those who were in the external consultancy and 4.676 to those that made use of emergency services – the three considered dimensions). This Inquiry was made between January and February of 2006 to the citizens aged 15 to 75 years old and that had been in the hospital at least once between the first semesters of 2005. The interviewees had to classify the perceived quality of the service that they had during their stay in the hospital, in a scale from 1 (very bad) to 10 (very good). The results of this inquiry pointed to a Satisfaction Total Index medium range of 77,8% (in a scale from 1 to 100) [26].

In order to know the users' socio-demographic determinants of the perceived evaluation of hospitals services, we considered the following independent variables: resident population, resident population by age (less than 14 years old, between 15 and 24 years old, between 25 and 64 years old and 65 or more years old) employed population, unemployed population, purchase power and educational background (1<sup>st</sup> cycle, 2<sup>nd</sup> cycle, 3<sup>rd</sup> cycle, high school, university and analphabetic) – all of them by total, women and men. Moreover, the data considering the target population was

obtained from the 2001 census, conducted by the National Statistic Institute [27].

Taking into account that some hospitals have a specialized service (and do not have a stable target population) we did not include them (7 in a total of 31) to test this hypothesis.

Considering our second hypothesis, we will make use of the regression analysis as predicted in the *Statistical Package for the Social Sciences – 15<sup>th</sup> version*. To test our hypothesis we will have for dependent variable the Satisfaction Total Index [26]. In order to know the financial and operational determinants of the users' perceived evaluation of hospitals services, we considered two dimensions: the operational and the financial ones. In what respects the operational dimension, we made use of indicators from six organizational departments: internment and surgery (indicator: number of patients that left the service per month); internment (indicators: simple internment period average per day; internment period adjusted by complexity average per day; number of doctors per 10 beds adjusted by complexity; number of nurses per 10 beds adjusted by complexity, other workers per 10 beds adjusted by complexity); external consultation (number of consultation per cabinet per day); urgency (number of urgencies per 100 consultations); surgery room (programmed surgery per room per month) [26]. Regarding the financial dimensions, we considered the organisational results as a whole. For this last dimension we used the following indicators: financial results; cost of medicines per pattern patient adjusted by complexity; other consumables per pattern patient adjusted by complexity) [26].

We will proceed with the results and their discussion.

## VI. RESULTS AND DISCUSSION

Considering our first hypothesis, i.e., to know if the socio-demographic characteristics determine the hospital users' perception of the hospital services quality, and through the use of the Linear Regression through the Origin or without a constant and considering the Total Satisfaction Index as the dependent variable, we conclude that only the lower purchase power ( $sig.=0.000$ ) explains those results (see Table I).

But through the use of regression analysis with a constant model, we conclude that: 1) Education 1<sup>st</sup> Cycle Men ( $sig.=0.008$ ) and Women ( $sig.=0.015$ ); 2) Education 2<sup>nd</sup> Cycle Men ( $sig.=0.011$ ) and Women ( $sig.=0.041$ ) explain the results obtained by the ministry study (see Table II).

Due to these results, our first hypothesis is confirmed, i.e., socio-demographic conditions determine the evaluation of the perceived quality services, in our case the purchase power and the first two educational levels of population.

Considering our second hypothesis, to know if the financial and operational results determine users' perceived evaluation of the quality services, and through the use of the Linear Regression through the Origin or without a constant and considering the Total Satisfaction Index as the dependent variable, we conclude that the number of patients that left the services per month – internment and surgery departments – explains the perceived quality of hospital services by users ( $sig.=0,049$  – see Table III). Besides that, the organizational financial results also have an influence in the users' perceived hospital services quality ( $sig.=0,041$  – see Table III).

Through the use of regression analysis with a constant model, we conclude that the number of nurses per 10 beds adjusted by complexity – internment department – determines the users' perceived hospital services quality ( $sig.=0,040$  – see Table IV).

Due to these results, our second hypothesis is confirmed, i.e., the financial and operational (number of patients that left the service per month – internment and surgery departments' and the number of nurses per 10 beds adjusted by complexity – internment department) results determine users' perceived evaluation of the quality services.

TABLE I  
MODEL WITHOUT A CONSTANT

		Coefficients (a,b)				
Mod.		Unstand. Coef.	Stand. Coef.	t	Sig.	
		B	Std. Error	Beta	B	Std. Error
1	Purchase power	,848	,103	1,065	8,261	,000
	Education 1st cycle Men	-,003	,004	-1,483	-,680	,514
	Education 1st cycle Women	,001	,003	,761	,430	,677
	Education 2nd cycle Men	,006	,005	1,351	1,039	,326
	Education 2nd cycle Women	-,001	,004	-,224	-,267	,795

a) Dependent Variable: Satisfaction Index Total

b) Linear Regression through the Origin

$sig < 0.05$

TABLE II  
MODEL WITH A CONSTANT

		Coefficients (a)				
Mod.		Unstand. Coef.	Std. Error	Stand. Coef.	t	Sig.
		B		Beta	B	Std. Error
1	(Constant)	74,180	1,787		41,500	,000
	Education 1st cycle Men	-,003	,001	-15,475	-3,398	,008
	Education 1st cycle Women	,002	,001	13,067	2,990	,015
	Education 2nd cycle Men	,004	,001	9,480	3,205	,011
	Education 2nd cycle Women	-,002	,001	-4,916	-2,390	,041

a) Dependent Variable: Satisfaction Index Total

$sig < 0.05$

TABLE III  
MODEL WITHOUT A CONSTANT

		Coefficients (a,b)			
Mod.		Unstand. Coef.	Stand. Coef.	t	
		B	Std. Error	Beta	B
1	Patients left/bed	3,687	1,500	,186	2,459
	Finan. Res. (€)	1,00E-005	,000	,095	2,601
					Sig. Std. Error
					,049
					,041

a) Dependent Variable: Satisfaction Index Total

b) Linear Regression through the Origin

sig &lt;0.05

TABLE IV  
MODEL WITH A CONSTANT

		Coefficients (a,b)			
Mod.		Unstand. Coef.	Stand. Coef.	t	
		B	Std. Error	Beta	B
1	(Constant)	71,048	13,822		5,140
	Global Effi. Index	-,001	,047	-,004	-,019
	Urgencies 100/cons.	-,050	,028	-,434	-,1786
	Ave. days interment (adj./com.)	-3,035	1,630	-,643	-,1862
	Nurses/10 beds (adj./com.)	1,468	,629	,467	2,333
					,040

a) Dependent Variable: Satisfaction Index Total

sig &lt;0.05

## VII. CONCLUSION

The administrative reform under the influence of the NPM introduced the TQM and the MbR models in the public sector in order to achieve a more efficient way and at the same time higher quality in the delivery of public goods. This model started in the UK, and was later adopted in the Portuguese administrative reform.

In Portugal, the national health services, especially after the privatization of 31 public hospitals, was the first to adopt these private models and tools. In order to raise efficiency and to get better health services, the ministry demanded those 31 organizations to make use of financial and operational indicators and, at the same time, launched the users' satisfaction measurement.

Due to the development of these two measures, we proposed in this paper to know the socio-demographic and operational-financial determinants that could influence the users' perception about the hospital services quality. The results of our study show us that socio-demographic conditions and the financial and operational organizational results determine users' perceived evaluation of the services quality. Due to these results, we support the idea that regarding financial and operational results, hospitals managers can now improve managerial results and at the same time the users' satisfaction with the services provided.

Besides that, there are some socio-demographic conditions that have an influence in the users' evaluation of the hospital services perceived quality, namely the purchase power and the

first two educational levels of population. However, even though there is a correlation between socio-demographic characteristics (independent variable) and the users' perceived satisfaction (dependent variable), it is impossible to the hospital manager to influence the first variable.

To finish we want to alert for future investigations, especially those intending to compare users' satisfaction towards any kind of service, that there are some variables not possible to control. However, it is possible to adopt a model that can prevent the effects caused by different users' socio-demographic characteristics.

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